

GMP IV INTO V SUMMER HOMEWORK

NAME: _____

- THIS HOMEWORK WILL BE YOUR FIRST GMP V ASSIGNMENT.
- THIS IS NOT MEANT TO BE DONE IN ONE SITTING. PLAN AHEAD AND PACE YOURSELF SO THAT YOU ARE DOING ONLY A FEW PROBLEMS AT A TIME. YOU WILL GET MUCH MORE OUT OF IT THIS WAY.
- THIS WORKSHEET INCLUDES THREE TOPICS: PROVING TRIG IDENTITIES, DECOMPOSING PARTIAL FRACTIONS, AND SOLVING A VARIETY OF EQUATIONS. WE SUGGEST FINDING INTERNET TUTORIALS TO REVIEW, OR LEARN, THESE TOPICS SUCH AS KAHN ACADEMY OR PURPLEMATH.

DIRECTIONS: VERIFY EACH TRIGONOMETRIC IDENTITY. COMPLETE ALL WORK ON A SEPARATE PIECE OF PAPER.

1. $\cos^3 \theta + \sin^2 \theta \cos \theta = \cos \theta$
2. $\sec \theta \sin \theta = \tan \theta$
3. $\cos^2 \theta - \sin^2 \theta = 2 \cos^2 \theta - 1$
4. $\sin \theta (1 + \csc \theta) = \sin \theta + 1$
5. $(1 + \tan^2 \theta) \cos^2 \theta = 1$
6. $(\sec \theta + \tan \theta)(\sec \theta - \tan \theta) = 1$
7. $\sin \theta + \cos \theta \cot \theta = \csc \theta$
8. $\frac{\cot \theta}{1 + \cot^2 \theta} = \sin \theta \cos \theta$
9. $\frac{(1 + \sin \theta)^2}{\cos^2 \theta} = \frac{1 + \sin \theta}{1 - \sin \theta}$
10. $\csc \theta - \sin \theta = \cot \theta \cos \theta$

DIRECTIONS: WRITE THE PARTIAL FRACTION DECOMPOSITION OF THE RATIONAL EXPRESSION.

11. $\frac{x-2}{(x-4)(x-3)}$

12. $\frac{x}{x^2+3x+2}$

13. $\frac{3x^2-x-14}{x^3-x}$

16. $\frac{x+5}{x^3-2x^2+x}$

14. $\frac{15x+45}{x^2+7x+10}$

17. $\frac{-8x^2-23x-18}{(x+2)(x+1)^2}$

15. $\frac{5x+7}{(x-3)^2}$

DIRECTIONS: SOLVE EACH OF THE FOLLOWING EQUATIONS. COMPLETE ALL WORK ON A SEPARATE PIECE OF PAPER.

18. $-3(9z + 7) = 33 + 6z$

19. $3x - 4(7-2x) = -61$

20. $\frac{2}{|y-2|} = 22$

21. $\left| \frac{-b}{7} - 29 \right| = 13$

22. $|7x| + 4 = 21$

23. $b^2 + 3b = 0$

24. $s^2 + s - 18 = 12$

25. $y^2 + 8 = -28$

26. $-2h^2 + 4 = 68$

27. $g^2 - 12g + 4 = -1$

28. $d^2 - 11d = 5$

29. $k^2 + 4k - 19 = 41$

30. $12n^2 - 37n - 15 = 0$

31. (complete the square) $12r^2 + r - 35 = 0$

32. (complete the square) $x^2 - 9x = -20$

33. (complete the square) $z^2 - 4z - 1 = 4$

34. $\frac{1}{y} = \frac{7}{5y} + 4$

35. $\frac{1}{14p^2} = \frac{1}{7p^2} - \frac{1}{p}$

36. $\frac{z-8}{10z^2} + \frac{10}{5z^2} = \frac{z-12}{5z^2}$

37. $\frac{1}{b} + \frac{10b+12}{b^2+6b} = \frac{5b-10}{b^2+6b}$